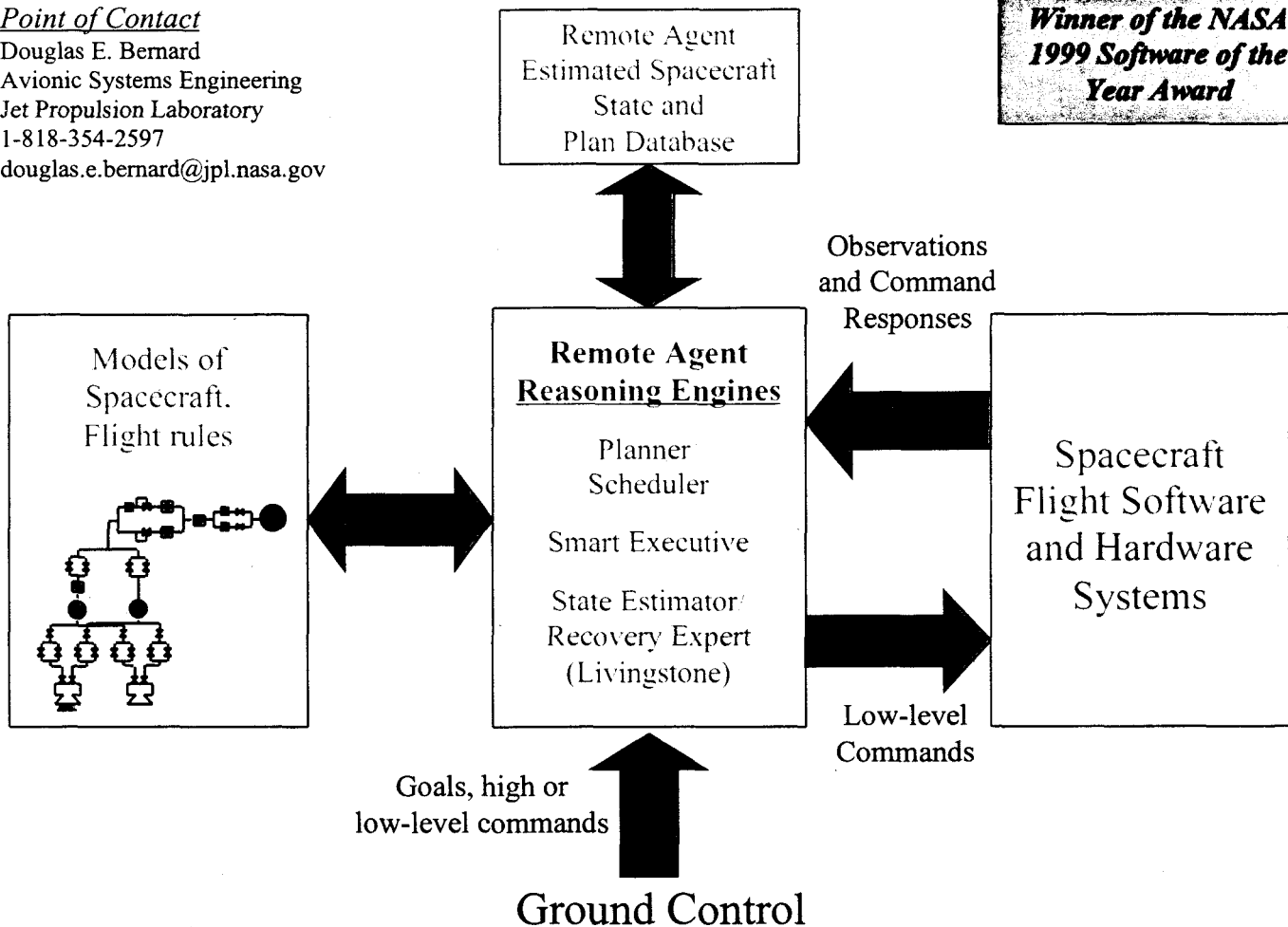


# Remote Agent Experiment Fact Sheet

## Point of Contact

Douglas E. Bernard  
Avionic Systems Engineering  
Jet Propulsion Laboratory  
1-818-354-2597  
douglas.e.bernard@jpl.nasa.gov

**Winner of the NASA  
1999 Software of the  
Year Award**



## Validation Objectives

- ✓ •Initiate and generate flexible plans on-board
- ✓ •Reject low-priority, unachievable goals
- ✓ •Execute plans generated both on-board and from Ground
- ✓ •Confirm execution of commands
- ✓ •Demonstrate model-based failure detection and recovery
- ✓ •Maintain required spacecraft states in the face of failures
- ✓ •Re-plan following a failure
- ✓ •Generate back-to-back plans
- ✓ •Modify mission goals from Ground
- ✓ •Execute low-level commands from Ground
- ✓ •Update estimated spacecraft state database from Ground

## Capabilities

- Robust Goal-based commanding
  - Planner expands high-level goals into flexible plans
  - Executive decomposes plans into low-level spacecraft commands and monitors that the states commanded to are achieved and maintained
- Fail-operational model-based fault recovery
  - Livingstone identifies faults and suggests recoveries that the Executive uses to continue plan execution
  - If necessary, Executive requests the Planner to generate a new plan in light of failure

## Applicability to future missions

Remote Agent technologies are generally applicable to mission that benefit from highly autonomous operation and are currently being applied to prototypes of future NASA missions including a space-based interferometer and an in-situ propellant production plant.